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Rong et al.

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(54) **METHOD FOR DISTRIBUTING VIRTUAL USER IDENTIFICATION DATA, METHOD FOR ACQUIRING VIRTUAL USER IDENTIFICATION DATA, AND DEVICE**

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H04W 8/20 (2009.01)
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CPC ***H04W 8/205*** (2013.01); ***H04B 5/0031*** (2013.01); ***H04W 8/183*** (2013.01); ***H04W 8/265*** (2013.01); *H04W 4/008* (2013.01)

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USPC 455/41.1
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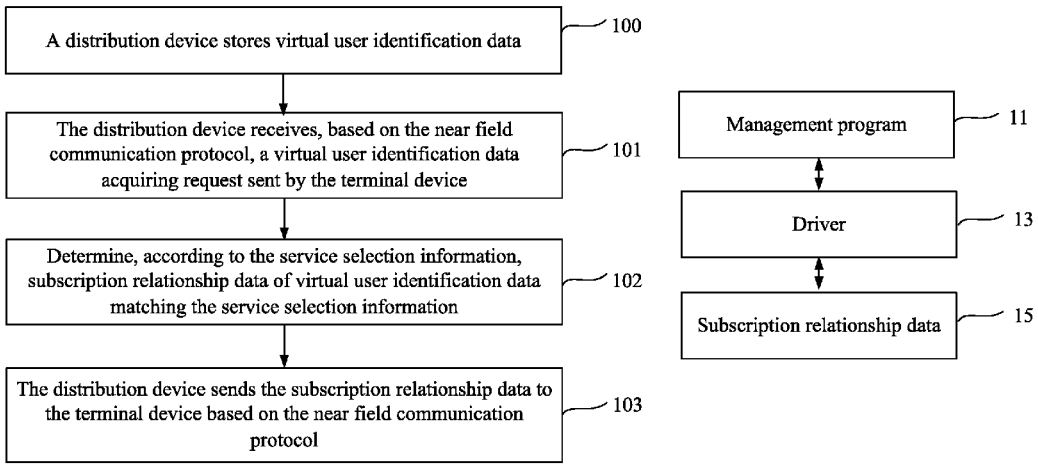
(74) *Attorney, Agent, or Firm* — Slater Matsil, LLP

(57) **ABSTRACT**

A distribution method is disclosed. A distribution device receives based on a near field communication protocol, a virtual user identification data acquiring request sent by a terminal device. The virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired. According to the service selection information, subscription relationship data of virtual user identification data matching the service selection information is determined. The distribution device sends the subscription relationship data to the terminal device based on the near field communication protocol.

20 Claims, 8 Drawing Sheets



(51) **Int. Cl.**

H04W 8/18	(2009.01)
H04W 8/26	(2009.01)
H04W 4/00	(2009.01)

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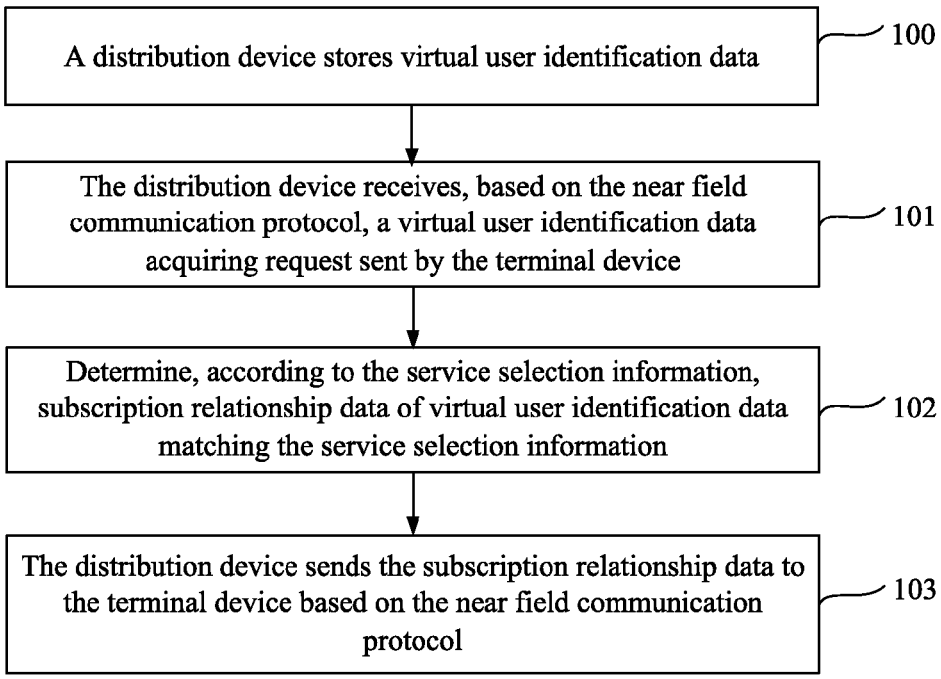
A distribution device stores virtual user identification data
100
The distribution device receives, based on the near field communication protocol, a virtual user identification data acquiring request sent by the terminal device
101
Determine, according to the service selection information, subscription relationship data of virtual user identification data matching the service selection information
102
The distribution device sends the subscription relationship data to the terminal device based on the near field communication protocol
103

FIG. 1a

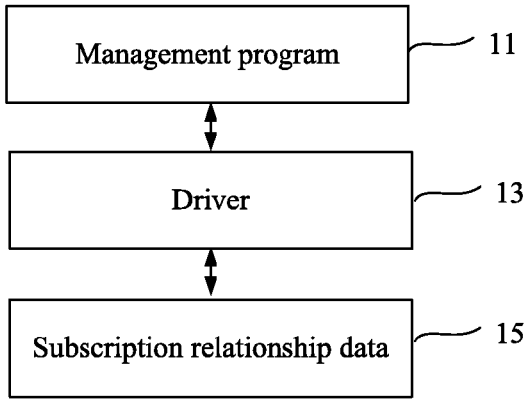
Management program
11
Driver
13
Subscription relationship data
15

FIG. 1b

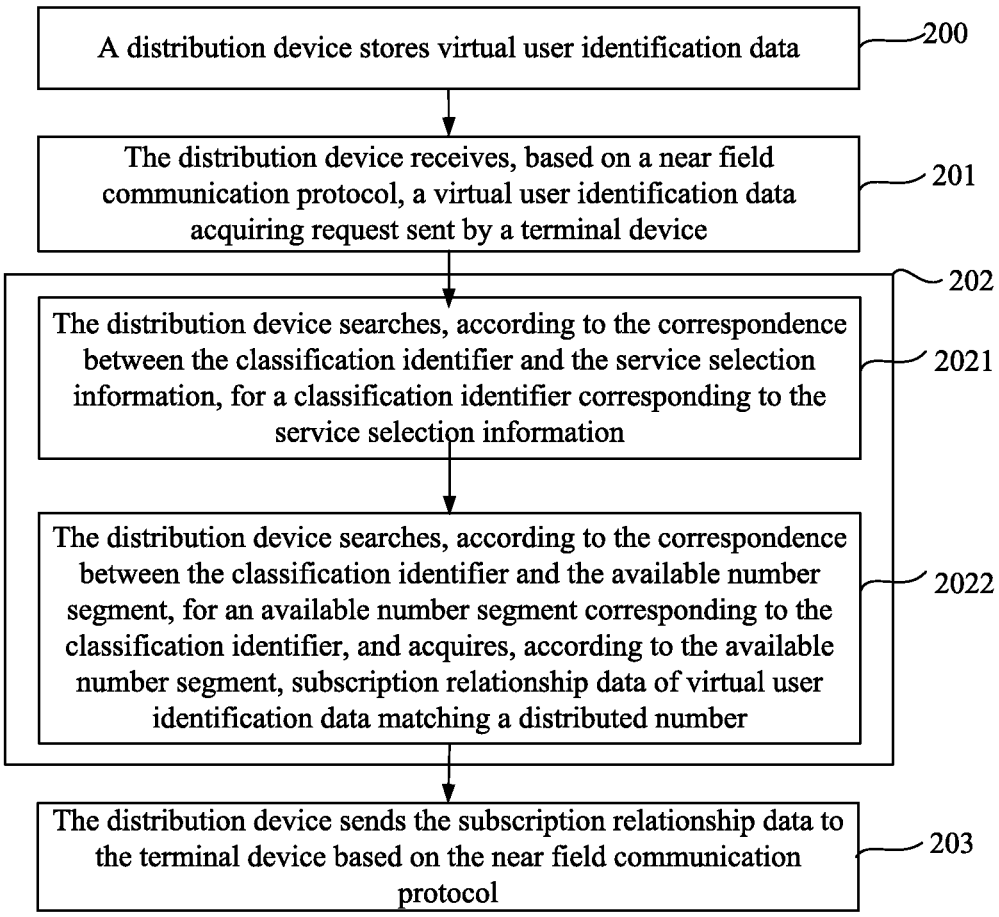
A distribution device stores virtual user identification data
200
The distribution device receives, based on a near field communication protocol, a virtual user identification data acquiring request sent by a terminal device
201
202
The distribution device searches, according to the correspondence between the classification identifier and the service selection information, for a classification identifier corresponding to the service selection information
2021
The distribution device searches, according to the correspondence between the classification identifier and the available number segment, for an available number segment corresponding to the classification identifier, and acquires, according to the available number segment, subscription relationship data of virtual user identification data matching a distributed number
2022
The distribution device sends the subscription relationship data to the terminal device based on the near field communication protocol
203

FIG. 2

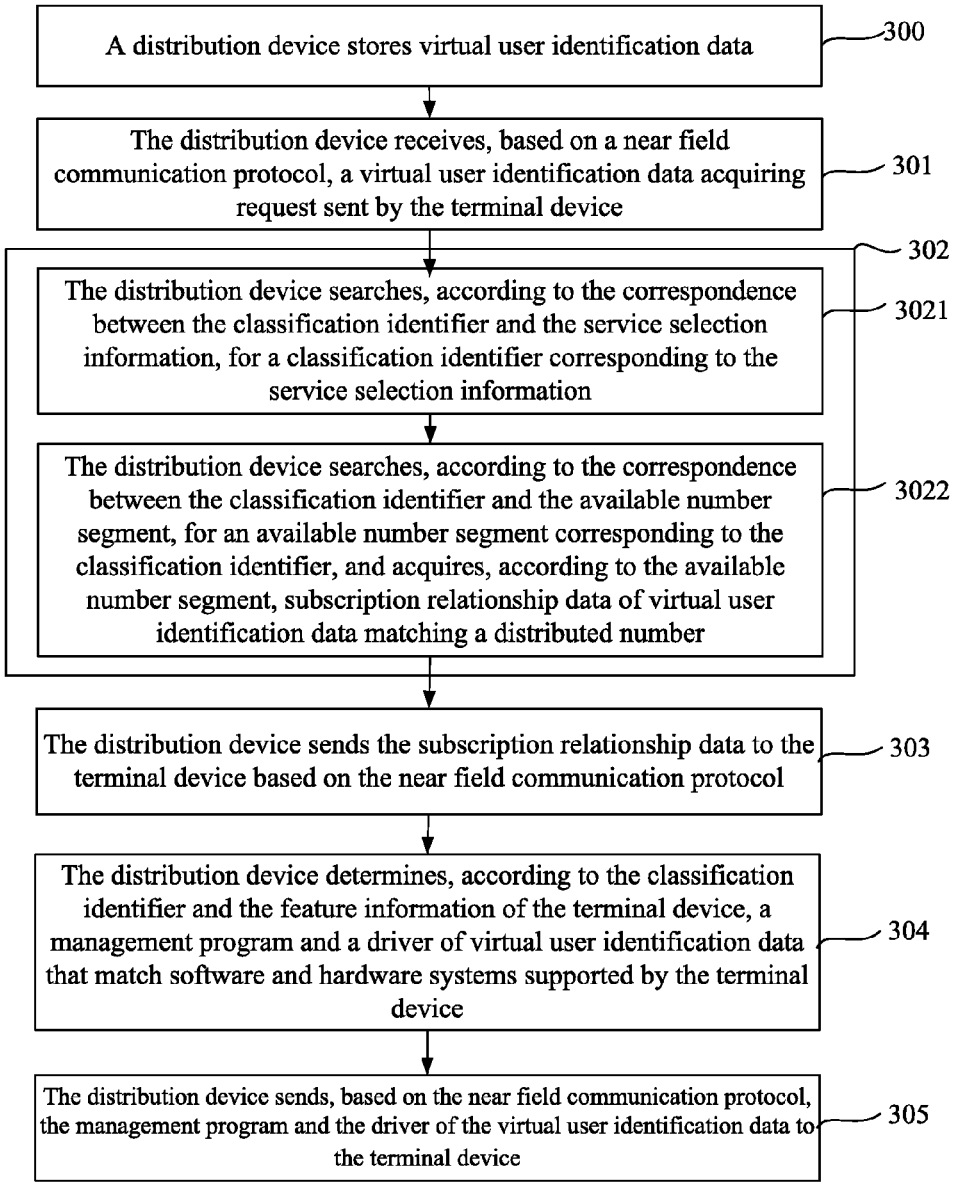
A distribution device stores virtual user identification data
300
The distribution device receives, based on a near field communication protocol, a virtual user identification data acquiring request sent by the terminal device
301
302
The distribution device searches, according to the correspondence between the classification identifier and the service selection information, for a classification identifier corresponding to the service selection information
3021
The distribution device searches, according to the correspondence between the classification identifier and the available number segment, for an available number segment corresponding to the classification identifier, and acquires, according to the available number segment, subscription relationship data of virtual user identification data matching a distributed number
3022
The distribution device sends the subscription relationship data to the terminal device based on the near field communication protocol
303
The distribution device determines, according to the classification identifier and the feature information of the terminal device, a management program and a driver of virtual user identification data that match software and hardware systems supported by the terminal device
304
The distribution device sends, based on the near field communication protocol, the management program and the driver of the virtual user identification data to the terminal device
305

FIG. 3

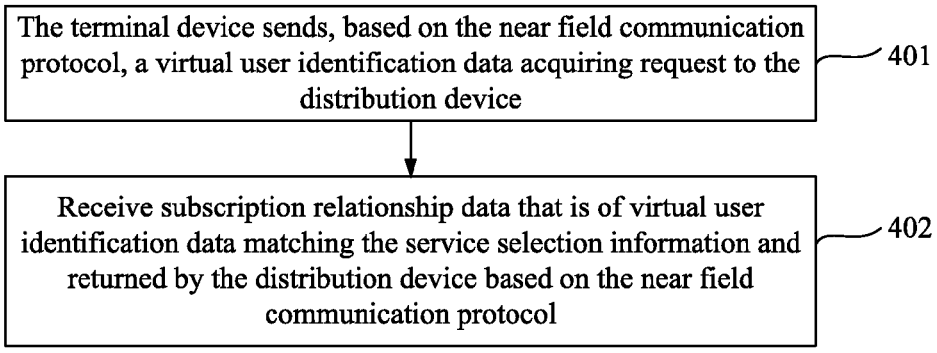
The terminal device sends, based on the near field communication protocol, a virtual user identification data acquiring request to the distribution device
401
Receive subscription relationship data that is of virtual user identification data matching the service selection information and returned by the distribution device based on the near field communication protocol
402

FIG. 4

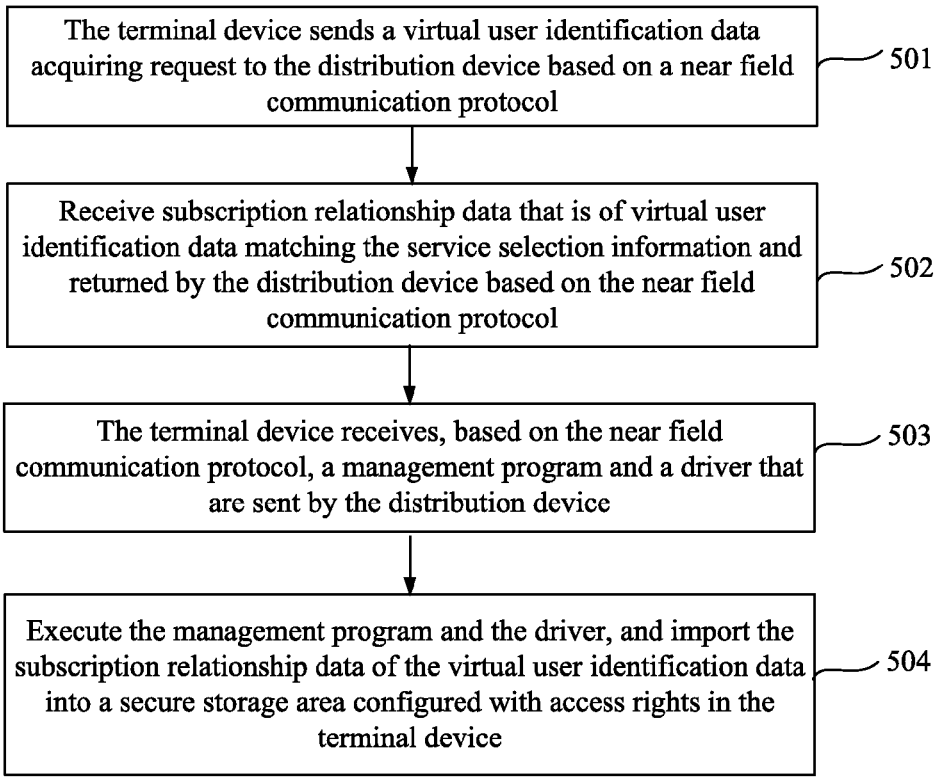
The terminal device sends a virtual user identification data acquiring request to the distribution device based on a near field communication protocol
501
Receive subscription relationship data that is of virtual user identification data matching the service selection information and returned by the distribution device based on the near field communication protocol
502
The terminal device receives, based on the near field communication protocol, a management program and a driver that are sent by the distribution device
503
Execute the management program and the driver, and import the subscription relationship data of the virtual user identification data into a secure storage area configured with access rights in the terminal device
504

FIG. 5

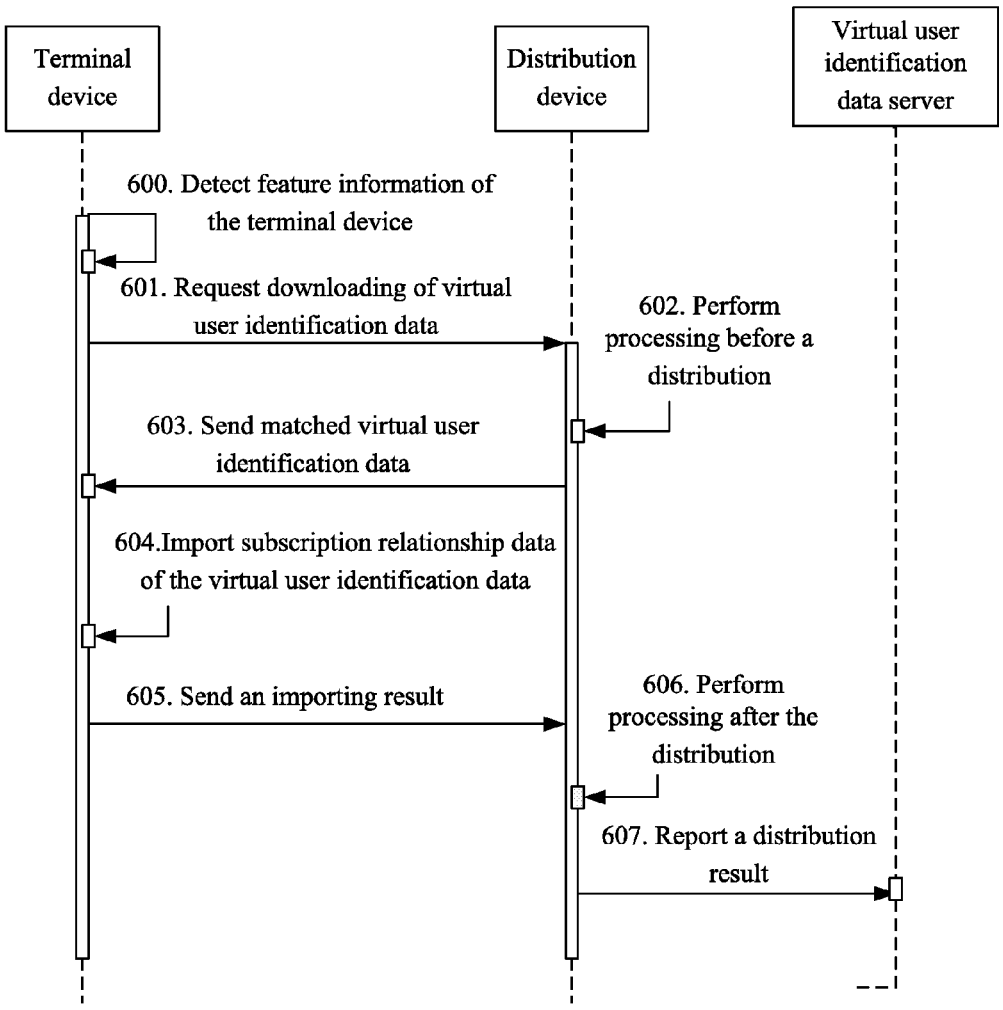
Terminal device
Distribution device
Virtual user identification data server
600. Detect feature information of the terminal device
601. Request downloading of virtual user identification data
602. Perform processing before a distribution
603. Send matched virtual user identification data
604.Import subscription relationship data of the virtual user identification data
605. Send an importing result
606. Perform processing after the distribution
607. Report a distribution result

FIG. 6

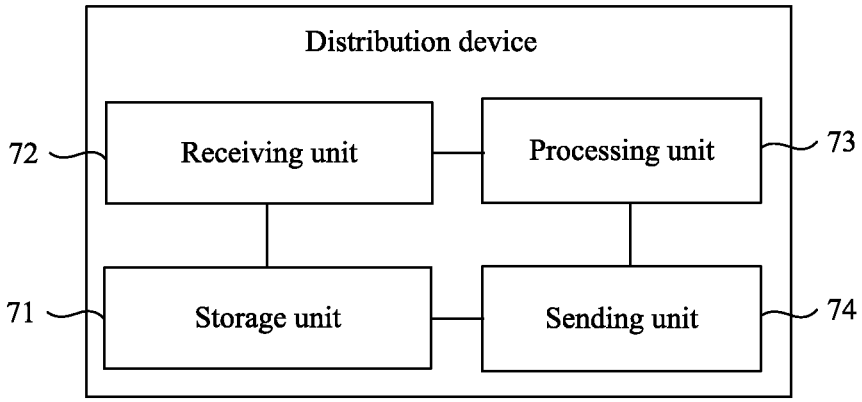
Distribution device
72
Receiving unit
Processing unit
73
71
Storage unit
Sending unit
74

FIG. 7

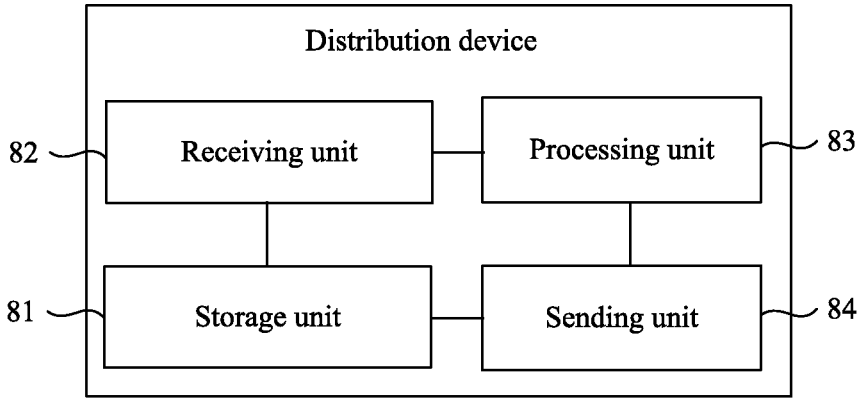
Distribution device
82
Receiving unit
Processing unit
83
81
Storage unit
Sending unit
84

FIG. 8

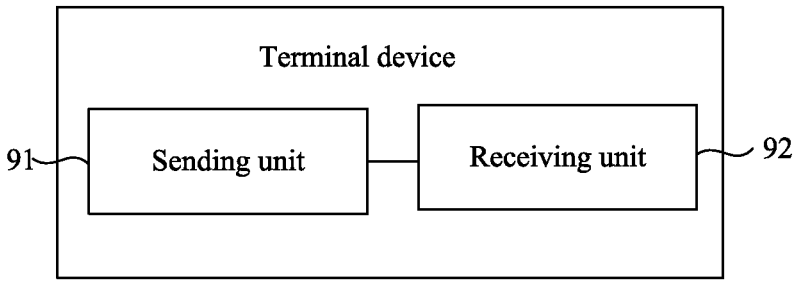
Terminal device
91
Sending unit
Receiving unit
92

FIG. 9

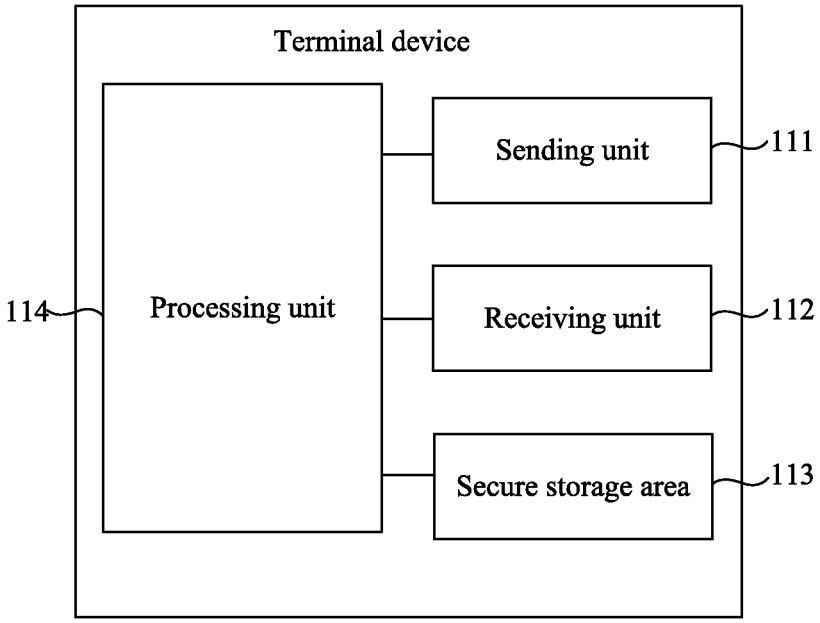
Terminal device
Sending unit
111
114
Processing unit
Receiving unit
112
Secure storage area
113

FIG. 10

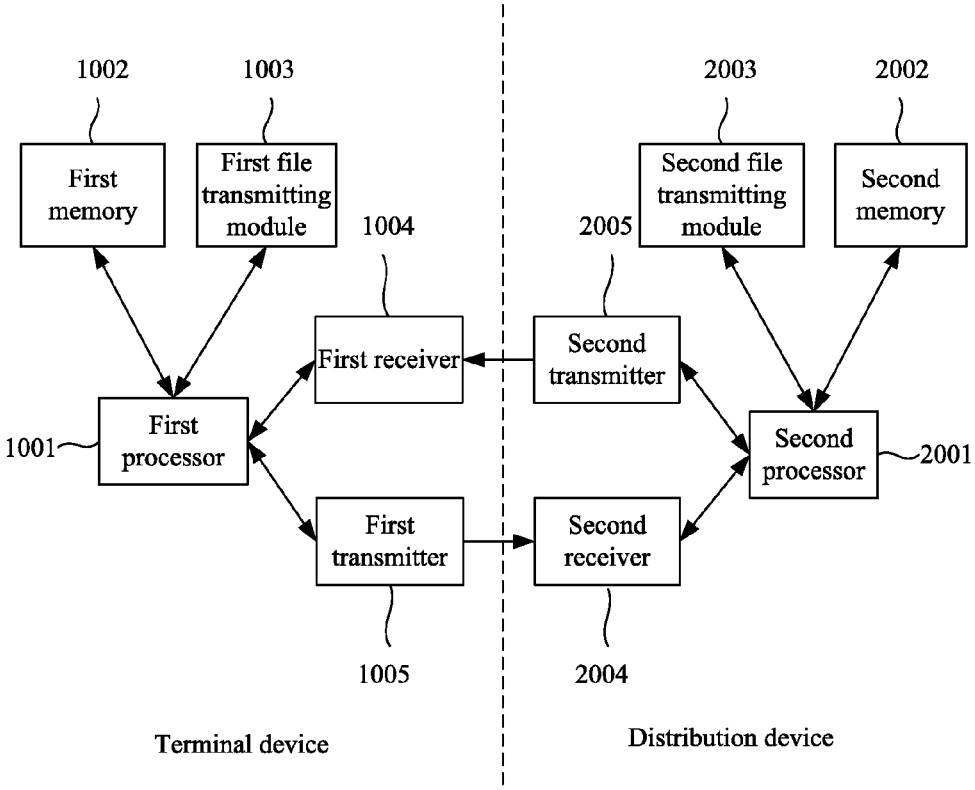
1002
1003
2003
2002
First memory
First file transmitting module
1004
2005
Second file transmitting module
Second memory
First receiver
Second transmitter
1001
First processor
Second processor
2001
First transmitter
Second receiver
1005
2004
Terminal device
Distribution device

FIG. 11

METHOD FOR DISTRIBUTING VIRTUAL USER IDENTIFICATION DATA, METHOD FOR ACQUIRING VIRTUAL USER IDENTIFICATION DATA, AND DEVICE

This application is a continuation of International Application No. PCT/CN2014/076303, filed on Apr. 26, 2014, which claims priority to Chinese Patent Application No. 201310221077.7, filed on Jun. 5, 2013, both of which are hereby incorporated by reference in their entireties.

TECHNICAL FIELD

The present invention relates to the field of communications technologies and, in particular embodiments, to a method for distributing virtual user identification data, a method for acquiring virtual user identification data, and a device.

BACKGROUND

In wireless communication, a user identity module generally needs to be deployed on a terminal. In the GSM standard, the user identity module is called a subscriber identity module SIM (Subscriber Identity Module); in the CDMA standard, the user identity module is called a user identity module UIM (User Identity Module); and in the UMTS standard, the user identity module is called a universal subscriber identity module USIM (Universal Subscriber Identity Module). Currently, the foregoing user identity module exists in a form of a physical card, and the terminal can be used only after the terminal is installed with the physical card.

With the development of technologies, virtual user identification data is further introduced, that is, a card in a physical form does not need to be inserted into a mobile phone, but data content corresponding to a user identity module (hereinafter referred to as virtual user identification data) is downloaded and stored in a secure storage area of the mobile phone, so as to achieve a same effect as a physical SIM card. In addition, the use of the virtual user identification data does not rely on a slot that is reserved for the physical SIM card during manufacturing of the mobile phone, and multiple pieces of virtual user identification data can be used in a mobile phone more conveniently. In the prior art, a mobile terminal is required to have a capability of accessing a communications network. However, under a specific condition, for example, when the mobile terminal is not within an operator service area, the mobile terminal cannot access the communications network, and therefore cannot access a remote database, so that the virtual user identification data cannot be downloaded.

SUMMARY

The present invention provides a method for distributing virtual user identification data, a method for acquiring virtual user identification data, and a device, which are used to solve a technical problem that when a user cannot access an operator network or the Internet, the user obtains, by using a terminal device, subscription relationship data of required virtual user identification data.

According to a first aspect, the present invention provides a method for distributing virtual user identification data. A distribution device stores virtual user identification data. The distribution device is connected to a terminal device by using a near field communication protocol. The distribution device receives a virtual user identification data acquiring request sent by the terminal device and based on the near field communication protocol. The virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired. Subscription relationship data of virtual user identification data matching the service selection information is determined according to the service selection information. The distribution device sends the subscription relationship data to the terminal device based on the near field communication protocol.

With reference to the first aspect, in a first possible implementation manner that the virtual user identification data be stored by the distribution device, a correspondence between a classification identifier and the service selection information. The distribution device can search for classification identifier corresponding to the service selection information according to the correspondence between the classification identifier and the service selection information.

With reference to the first possible implementation manner of the first aspect, in a second possible implementation manner, the storing, by a distribution device, virtual user identification data specifically includes: storing, by the distribution device, a correspondence between the classification identifier and an available number segment; and the determining, according to the service selection information, subscription relationship data of virtual user identification data matching the service selection information specifically further includes: searching, by the distribution device, according to the correspondence between the classification identifier and the available number segment, for an available number segment corresponding to the classification identifier, and acquiring, according to the available number segment, subscription relationship data of virtual user identification data matching a distributed number.

With reference to the first possible implementation manner or the second possible implementation manner of the first aspect, in a third possible implementation manner, the storing, by a distribution device, virtual user identification data specifically further includes: storing, by the distribution device, a correspondence among the classification identifier, feature information, a management program, and a driver; and the virtual user identification data acquiring request further includes feature information of the terminal device, and the method for distributing virtual user identification data further includes: determining, by the distribution device, according to the classification identifier and the feature information of the terminal device, a management program and a driver of virtual user identification data that match software and hardware systems supported by the terminal device; and sending, by the distribution device, the management program and the driver of the virtual user identification data to the terminal device based on the near field communication protocol.

With reference to the first aspect and any one possible implementation manner of the first aspect, in a fourth possible implementation manner, the method for distributing virtual user identification data further includes updating locally stored virtual user identification data according to a distribution result.

With reference to the first aspect and any one possible implementation manner of the first aspect, in a fifth possible implementation manner, the method for distributing virtual user identification data further includes storing the subscription relationship data in a secure storage area configured with access rights in the distribution device.

According to a second aspect, the present invention provides a method for acquiring virtual user identification data. A distribution device stores virtual user identification data. The distribution device is connected to a terminal device by using a near field communication protocol. The terminal device sends, based on the near field communication protocol, a virtual user identification data acquiring request to the distribution device. The virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired. Subscription relationship data that is of virtual user identification data matching the service selection information is returned by the distribution device based on the near field communication protocol.

With reference to the second aspect, in a first possible implementation manner, the virtual user identification data acquiring request further includes feature information of the terminal device, and the method for acquiring virtual user identification data further includes receiving, by the terminal device, based on the near field communication protocol, a management program and a driver that are sent by the distribution device, where the management program and the driver match software and hardware systems supported by the feature information of the terminal device.

With reference to the second aspect and the first possible implementation manner of the second aspect, in a second possible implementation manner, the method for acquiring virtual user identification data further includes executing the management program and the driver, and importing the subscription relationship data of the virtual user identification data into a secure storage area configured with access rights in the terminal device.

According to a third aspect, the present invention provides a distribution device, where the distribution device is connected to a terminal device by using a near field communication protocol. A storing unit is configured to store virtual user identification data. A receiving unit is configured to receive, based on the near field communication protocol, a virtual user identification data acquiring request sent by the terminal device. The virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired. A processing unit is configured to determine, according to the service selection information, subscription relationship data of virtual user identification data matching the service selection information. A sending unit is configured to send the subscription relationship data to the terminal device based on the near field communication protocol.

With reference to the third aspect, in a first possible implementation manner, the virtual user identification data stored by the storing unit specifically includes: a correspondence between a classification identifier and the service selection information; and the processing unit is further configured to search, according to the correspondence between the classification identifier and the service selection information, for a classification identifier corresponding to the service selection information.

With reference to the first possible implementation manner of the third aspect, in a second possible implementation manner, the virtual user identification data stored by the storing unit specifically further includes: a correspondence between the classification identifier and an available number segment; and the processing unit is further configured to search, according to the correspondence between the classification identifier and the available number segment, for an available number segment corresponding to the classification identifier, and acquire, according to the available number segment, subscription relationship data of virtual user identification data matching a distributed number.

With reference to the first possible implementation manner or the second possible implementation manner of the third aspect, in a third possible implementation manner, the virtual user identification data stored by the storing unit specifically further includes: a correspondence among the classification identifier, feature information, a management program, and a driver; the virtual user identification data acquiring request further includes feature information of the terminal device; and the processing unit is further configured to determine, according to the classification identifier and the feature information of the terminal device, a management program and a driver of virtual user identification data that match software and hardware systems supported by the terminal device.

With reference to the third aspect and any one possible implementation manner of the third aspect, in a fourth possible implementation manner, the processing unit is further configured to update locally stored virtual user identification data according to a distribution result.

With reference to the third aspect and any one possible implementation manner of the third aspect, in a fifth possible implementation manner, the storing unit includes: a secure storage area configured with access rights, used to store the subscription relationship data of the virtual user identification data.

According to a fourth aspect, the present invention provides a terminal device. A distribution device stores virtual user identification data and the distribution device is connected to a terminal device by using a near field communication protocol. A sending device is configured to send, based on the near field communication protocol, a virtual user identification data acquiring request to the distribution device. The virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired. A receiving unit is configured to receive subscription relationship data that is of virtual user identification data matching the service selection information and returned by the distribution device based on the near field communication protocol.

With reference to the fourth aspect, in a first possible implementation manner, the virtual user identification data acquiring request further includes feature information of the terminal device, and the sending unit is further configured to receive, based on the near field communication protocol, a management program and a driver that are sent by the distribution device, where the management program and the driver match software and hardware systems supported by the feature information of the terminal device.

With reference to the fourth aspect and the first possible implementation manner of the fourth aspect, in a second possible implementation manner, the terminal device further includes a processing unit, configured to execute the management program and the driver, and import the subscription relationship data of the virtual user identification data into a secure storage area configured with access rights in the terminal device.

In the method for distributing virtual user identification data, the method for acquiring virtual user identification data, and the device provided by the embodiments of the present invention, a distribution device can distribute virtual user identification data to a target terminal device based on a near field communication protocol, so that the terminal device can also acquire subscription relationship data of required virtual user identification data without support of a communications network, and then the terminal device

activates subscription relationship data of the virtual user identification data, so as to achieve a purpose of accessing an operator network.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings included in the specification and forming one part of the specification, together with the specification, describe exemplary embodiments, features, and aspects of the present invention, and are used to explain principles of the present invention.

FIG. **1***a* is a flowchart of a method for distributing virtual user identification data according to Embodiment 1 of the present invention;

FIG. **1***b* is a structural diagram of virtual user identification data related content in the method for distributing virtual user identification data according to Embodiment 1 of the present invention;

FIG. **2** is a flowchart of a method for distributing virtual user identification data according to Embodiment 2 of the present invention;

FIG. **3** is a flowchart of a method for distributing virtual user identification data according to Embodiment 3 of the present invention;

FIG. **4** is a flowchart of a method for acquiring virtual user identification data according to Embodiment 4 of the present invention;

FIG. **5** is a flowchart of a method for acquiring virtual user identification data according to Embodiment 5 of the present invention;

FIG. **6** is a schematic diagram of an application scenario of a method for acquiring virtual user identification data according to Embodiment 6 of the present invention;

FIG. **7** is a structural block diagram of a distribution device according to Embodiment 7 of the present invention;

FIG. **8** is a structural block diagram of a distribution device according to Embodiment 8 of the present invention;

FIG. **9** is a structural block diagram of a terminal device according to Embodiment 9 of the present invention;

FIG. **10** is a structural block diagram of a terminal device according to Embodiment 10 of the present invention; and

FIG. **11** is a schematic diagram of an application scenario of a distribution device and a terminal device according to Embodiment 11 of the present invention.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

The following describes, with reference to the accompanying drawings, various exemplary embodiments, features, and aspects of the present invention in detail. A same mark in the accompanying drawings indicates components with a same or similar function. Though various aspects of the embodiments are shown in the accompanying drawings, unless otherwise specified, the accompanying drawings do not need to be drawn proportionally.

The dedicated term "exemplary" means "being used as an example, an embodiment or illustration". Any embodiment described as "exemplary" is not necessarily explained as being superior or better than other embodiments.

In addition, for better description of the present invention, a lot of specific details are provided in the following specific implementation manners. A person of ordinary skill in the art should understand that the present invention may also be implemented without the specific details. In some other embodiments, common methods, means, components, and circuits are not described in detail for the convenience of highlighting the major idea of the present invention.

Embodiment 1

FIG. **1***a* is a flowchart of a method for distributing virtual user identification data according to Embodiment 1 of the present invention. As shown in FIG. **1***a*, the method for distributing virtual user identification data includes the following steps.

Step **100**: A distribution device stores virtual user identification data, where the distribution device is connected to a terminal device by using a near field communication protocol.

Step **101**: The distribution device receives, based on the near field communication protocol, a virtual user identification data acquiring request sent by the terminal device, where the virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired.

Step **102**: Determine, according to the service selection information, subscription relationship data of virtual user identification data matching the service selection information.

Step **103**: The distribution device sends the subscription relationship data to the terminal device based on the near field communication protocol.

The virtual user identification data includes a management program **11**, a driver **13**, and subscription relationship data **15**. FIG. **1***b* is a structural diagram of virtual SIM card related content in the method for distributing virtual user identification data according to Embodiment 1 of the present invention. As shown in FIG. **1***b*, the subscription relationship data **15** may be accessed by using the management program **11** and the driver **13**, and all functions of a physical user identity module may be implemented by using software, where the specific functions may include the following content:

(1) User Related Data

The user related data of the virtual user identification data may be classified into four types: the first type is data stored fixedly, where this type of data may be stored in an ME (mobile equipment) in advance, which includes an IMSI (international mobile subscriber identification number), a KI (key identifier), or the like; the second type is network related data stored temporarily, for example, an LAI (local area identity), a TMSI (temporary mobile subscriber identity), and a public phone network code that is forbidden to access; the third type is related service code, such as a PIN (personal identification number), a PUK PIN unlocking key), and a charging rate; and the fourth type is a phone number directory, that is, a phone number input by a user at any time.

(2) Operation and Management on a User PIN

The virtual user identification data is protected by using a PIN code, where the PIN is a personal password of four digits to eight digits. Only when the user inputs a correct PIN code can the virtual user identification data be activated and can the mobile terminal access the virtual user identification data. The user can access an operator network to perform a voice call only after the PIN passes authentication.

(3) User Identity Authentication

Whether a user identity is valid is determined. An authentication process is performed between a network and the virtual user identification data, and the authentication is generally performed at a time when the mobile terminal registers with a network and initiates a call. When the

authentication starts, the network generates a 128-bit RAND (Random Number, random number); the random number is transferred to a mobile station through a radio control channel; and the management program **11** calculates an SRES (signed response) from a received RAND by using the virtual user identification data and according to a set key KI and a set algorithm A3, and returns a result to a network end. When the network end checks the key KI of the user in an authentication center, the network end calculates an SRES by using the same RAND and algorithm A3, and compares the SRES with the received SRES; and if the calculated SRES is the same as the received SRES, the authentication succeeds.

(4) Security Algorithm and Key

The most sensitive data of the virtual user identification data is security algorithms A3 and A8, a key KI, a PIN, a PUK, and a KC (Key Cipher, key cipher). The algorithms A3 and A8 are written when the virtual user identification data is generated, and cannot be read. The PIN code may be set on a mobile phone by the user, the PUK code is possessed by an operator, and the KC is exported from the KI during an encryption process.

The management program **11** and the driver **13** may implement functions of operation and management on the user PIN, user identity authentication, and the security algorithm and the key, and the subscription relationship data **15** may include user related data.

The method for distributing virtual user identification data is specifically described as follows.

The distribution device may store a large quantity of virtual user identification data in advance. If a user needs to download virtual user identification data, the user may send a virtual user identification data acquiring request to the distribution device after the user establishes a near field communication with the distribution device by using a terminal device, for example, a mobile phone, and by using a near field communication protocol, for example, Bluetooth, WiFi (wireless fidelity, wireless fidelity), WiFi-Direct (Wireless Fidelity Direct), or NFC; and after receiving the virtual user identification data acquiring request sent by the terminal device, the distribution device may determine subscription relationship data of matched virtual user identification data according to service selection information of virtual user identification data that expects to be acquired by the terminal device and is carried in the virtual user identification data acquiring request. The service selection information is equivalent to a filtering condition, and may indicate a type of a service that can be provided by the virtual user identification data that expects to be acquired by the user by using the terminal device, such as a communications network rate, an operator, a tariff, or a service area. The expectations may be selected on a human computer interaction interface by the user by using the terminal device.

After receiving the virtual user identification data acquiring request, the distribution device may search, according to the service selection information, for subscription relationship data that is of various virtual user identification data and stored in the distribution device, and send subscription relationship data of matched virtual user identification data to the terminal device.

In the method for distributing virtual user identification data provided by this embodiment, a distribution device can distribute virtual user identification data to a target terminal device based on a near field communication protocol, so that the terminal device can also acquire subscription relationship data of required virtual user identification data without support of a communications network, and then the terminal device activates the subscription relationship data of the virtual user identification data, so as to achieve a purpose of accessing an operator network.

Embodiment 2

FIG. **2** is a flowchart of a method for distributing virtual user identification data according to Embodiment 2 of the present invention. As shown in FIG. **2**, the method for distributing virtual user identification data includes.

Step **200**: A distribution device stores virtual user identification data, which may specifically include: storing, by the distribution device, a correspondence between a classification identifier and service selection information.

Step **201**: The distribution device receives, based on a near field communication protocol, a virtual user identification data acquiring request sent by a terminal device, where the virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired.

Step **202**: Determine, according to the service selection information, subscription relationship data of virtual user identification data matching the service selection information, which may specifically include:

Step **2021**: The distribution device searches, according to the correspondence between the classification identifier and the service selection information, for a classification identifier corresponding to the service selection information. Specifically, after receiving the virtual user identification data acquiring request from the terminal device, the distribution device may search, according to the received service selection information, such as a communications network speed, an operator, a tariff, or a service area, for a classification identifier of matched virtual user identification data in a virtual user identification data product table shown in Table 1, where the classification identifier may be classified according to the operator, the tariff, and the communications network speed, and may also be classified in another manner.

TABLE 1

VIRTUAL USER IDENTIFICATION DATA PRODUCT TABLE

Classification identifier	Operator	Tariff ($/M)	Service area
P0001	Vodafone	1	Britain and France
P0002	CMCC	1	China
P0003	CMCC	0.5	China
P0004	Vodafone	2	Italy

Further, in another embodiment of the present invention, the storing, by the distribution device, virtual user identification data specifically further includes: storing, by the distribution device, a correspondence between the classification identifier and an available number segment; and the determining, according to the service selection information, subscription relationship data of virtual user identification data matching the service selection information specifically further includes:

Step **2022**: The distribution device searches, according to the correspondence between the classification identifier and the available number segment, for an available number segment corresponding to the classification identifier, and acquires, according to the available number segment, subscription relationship data of virtual user identification data matching a distributed number.

Specifically, the distribution device may search, according to the determined classification identifier and in a correspondence table between the classification identifier and the available distributed number shown in Table 2, for matched information such as an available number segment, then select an available number of matched virtual user identification data, and acquire subscription relationship data corresponding to the available number. The subscription relationship data of the virtual user identification data may be data encrypted by using a digital certificate, or the like, and may uniquely represent a subscription relationship between a user and a service provider. In a process of using the virtual user identification data in the terminal device, the virtual user identification data may be similar to a phone number in Table 2, and may also be in another representation form. Finally, the distribution device sends the subscription relationship data of the matched virtual user identification data to the terminal device by using the near field communication protocol.

TABLE 2

CORRESPONDENCE TABLE BETWEEN A CLASSIFICATION IDENTIFIER AND A AVAILABLE DISTRIBUTED NUMBER

Classification identifier	Start number	End number
P0001	186123XXXXX	186200XXXXX
P0001	186300XXXXX	186400XXXXX
P0002	236300XXXXX	236400XXXXX
P0003	536300XXXXX	536400XXXXX
P0004	636300XXXXX	636400XXXXX

Step **203**: The distribution device sends the subscription relationship data to the terminal device based on the near field communication protocol.

In the method for distributing virtual user identification data provided by this embodiment, a distribution device can distribute virtual user identification data to a target terminal device based on a near field communication protocol, so that the terminal device can also acquire subscription relationship data of required virtual user identification data without support of a communications network, and then the terminal device activates the subscription relationship data of the virtual user identification data, so as to achieve a purpose of accessing an operator network.

Embodiment 3

FIG. **3** is a flowchart of a method for distributing virtual user identification data according to Embodiment 3 of the present invention. As shown in FIG. **3**, the virtual user identification data acquiring request includes service selection information, and may further include feature information of a terminal device. The method for distributing virtual user identification data includes the following steps.

Step **300**: A distribution device stores virtual user identification data, which may specifically include: storing, by the distribution device, a correspondence between a classification identifier, feature information, a management program and a driver.

Step **301**: The distribution device receives, based on a near field communication protocol, a virtual user identification data acquiring request sent by the terminal device, where the virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired.

Step **302**: Determine, according to the service selection information, subscription relationship data of virtual user identification data matching the service selection information. If the distribution device stores a correspondence between a classification identifier and the service selection information, step **302** may specifically include:

Step **3021**: The distribution device searches, according to the correspondence between the classification identifier and the service selection information, for a classification identifier corresponding to the service selection information.

If the distribution device stores a correspondence between the classification identifier and an available number segment, step **302** may specifically further include:

Step **3022**: The distribution device searches, according to the correspondence between the classification identifier and the available number segment, for an available number segment corresponding to the classification identifier, and acquires, according to the available number segment, subscription relationship data of virtual user identification data matching a distributed number.

Step **303**: The distribution device sends the subscription relationship data to the terminal device based on the near field communication protocol.

Step **304**: The distribution device determines, according to the classification identifier and the feature information of the terminal device, a management program and a driver of virtual user identification data that match software and hardware systems supported by the terminal device.

Step **305**: The distribution device sends, based on the near field communication protocol, the management program and the driver of the virtual user identification data to the terminal device.

Step **303** may also be performed after step **304** or step **305**, or step **303** and step **305** are performed simultaneously.

Management programs and drivers of various types of virtual user identification data may be installed in the terminal device in advance. The management program is used to manage subscription relationship data of virtual user identification data in a secure storage area of the terminal device. For example, when the terminal device has subscription relationship data of some virtual user identification data, the user may select, by executing the management program, subscription relationship data of virtual user identification data that expects to be used, and then access, by using a driver of the virtual user identification data, the subscription relationship data of the virtual user identification data in the secure storage area of the terminal device. The subscription relationship data is stored in the secure storage area, and the program and the driver may be stored in another area. Only an application with specific rights can access the secure storage area, for example, an application with rights to distribute a subscription relationship in the distribution device can access the secure storage area, and the terminal device and other applications cannot access the secure storage area.

If a management program and a driver of a type of virtual user identification data are not installed in the terminal device in advance, the management program and the driver may also be downloaded from the distribution device. In this case, feature information of the terminal device, such as a hardware feature and a software feature, may be carried in the virtual user identification data acquiring request. The hardware feature may include information such as whether hardware has a secure storage area, a CPU model, or a unique hardware identifier, and the software feature may include information such as a software operating system version.

Specifically, after the classification identifier is determined according to Table 1, if a management program and a driver need to be downloaded, a comparison table between a classification identifier and a management program/driver shown in Table 3 may be searched according to the software

feature and the hardware feature in the feature information of the terminal device, so as to determine a management program and a driver of virtual user identification data that match software and hardware systems supported by the terminal device; then, the management program, the driver, and the subscription relationship data of the matched virtual user identification data are sent to the terminal device by using the near field communication protocol.

TABLE 3

COMPARISON TABLE BETWEEN A CLASSIFICATION IDENTIFIER AND A MANAGEMENT PROGRAM/DRIVER

Classification identifier	Operating system version	CPU version	Driver program package	Management program package
P0001	iOS 5.0	Apple A6	file://f:\1.dat	file://d:\1.apk
P0001	Android 4.0	Qualcomm 8 × 55	file://f:\2.dat	file://d:\2.apk
P0002	Android 3.2	Qualcomm 7 × 27	file://f:\3.dat	file://d:\3.apk
P0003	Android 3.2	Qualcomm 8 × 55	file://f:\4.dat	file://d:\4.apk
P0004	Android 4.2	Qualcomm 8 × 55	file://f:\5.dat	file://d:\5.apk

A storage position of the subscription relationship data of the virtual user identification data in the distribution device may be an ordinary storage area, and may also be a secure storage area configured with access rights. If the subscription relationship data of the virtual user identification data is stored in the secure storage area, the subscription relationship data of the virtual user identification data that is allowed to be distributed may be more secure.

Further, after the subscription relationship data of the matched virtual user identification data is distributed to the terminal device, locally stored virtual user identification data is updated according to a distribution result, which specifically includes the following two manners:

Manner 1: Updating a state of the matched virtual user identification data that has already been distributed to the terminal device successfully. As shown in Table 4, using the virtual user identification data of which a number is 18612345678 and that has already been distributed successfully as an example, a state of the virtual user identification data is updated to "distributed completely", and may also be another description indicating that the virtual user identification data has been distributed completely and is not allowed to be distributed to another terminal device.

TABLE 4

STATE TABLE OF VIRTUAL USER IDENTIFICATION DATA

Identity (number) of virtual user identification data	State	Hardware identifier	User identity	Balance ($)
18612345678	Distributed completely	111XXXXX	User1	0
18612345679	Used normally	222YYYYYYY	User2	100
63630020000	Insufficient balance	236400XXXXX	User2	0
63630020034	Used normally	3456zzzzzzz	User3	200

Manner 2: Deleting subscription relationship data of the matched virtual user identification data that has already been distributed to the terminal device successfully. As shown in Table 5, for example, assuming that subscription relationship data of virtual user identification data that is allowed to be distributed is stored in a secure storage area of the distribution device, virtual user identification data of which the number is "18612345678" and that has already been distributed successfully may be deleted directly from the secure storage area of the distribution device.

TABLE 5

STATE OF VIRTUAL USER IDENTIFICATION DATA

Identity (number) of virtual user identification data	State	Hardware identifier	User identity	Balance ($)
18612345679	Used normally	222YYYYYYY	User2	100
63630020000	Insufficient balance	236400XXXXX	User2	0
63630020034	Used normally	3456zzzzzzz	User3	200

After Table 4 or Table 5 is updated, information of the available number segment in Table 2 may also be updated correspondingly.

Still further, after distributing the subscription relationship data of the matched virtual user identification data to the terminal device, the distribution device may further report a distribution result to a virtual user identification data server, so that the virtual user identification data server modifies a state of virtual user identification data that has already been distributed, so as to prepare for provision of an operation service.

In the method for distributing virtual user identification data provided by this embodiment, a distribution device can distribute virtual user identification data to a target terminal device based on a near field communication protocol, so that the terminal device can also acquire subscription relationship data of required virtual user identification data without support of a communications network, and then the terminal device activates the subscription relationship data of the virtual user identification data, so as to achieve a purpose of accessing an operator network.

Embodiment 4

FIG. **4** is a flowchart of a method for acquiring virtual user identification data according to Embodiment 4 of the present invention. A distribution device stores virtual user identification data, and the distribution device is connected to a terminal device by using a near field communication protocol. As shown in FIG. **4**, the method for acquiring virtual user identification data may include the following steps.

Step **401**: The terminal device sends, based on the near field communication protocol, a virtual user identification data acquiring request to the distribution device, where the virtual user identification data acquiring request carries

service selection information of virtual user identification data that needs to be acquired.

Step **402**: Receive subscription relationship data that is of virtual user identification data matching the service selection information and returned by the distribution device based on the near field communication protocol.

Specifically, when the terminal device needs to download virtual user identification data, the terminal device first establishes a near field communication with the distribution device by using a near field communication protocol, such as Bluetooth, WiFi, WiFi-Direct, or NFC, and then sends a request for requiring virtual user identification data required by the terminal device to the distribution device, where the virtual user identification data acquiring request carries service selection information of virtual user identification data that the terminal device expects to acquire; and after the distribution device determines subscription relationship data of virtual user identification data matching the service selection information, the terminal device receives the subscription relationship data of the matched virtual user identification data. For a specific method for determining the service selection information and the subscription relationship data of the virtual user identification data, reference may be made to the related descriptions in the foregoing embodiment of the method for distributing virtual user identification data.

In the method for acquiring virtual user identification data provided by this embodiment, a distribution device can distribute virtual user identification data to a target terminal device based on a near field communication protocol, so that the terminal device can also acquire subscription relationship data of required virtual user identification data without support of a communications network, and then the terminal device activates the subscription relationship data of the virtual user identification data, so as to achieve a purpose of accessing an operator network.

Embodiment 5

FIG. **5** is a flowchart of a method for acquiring virtual user identification data according to Embodiment 5 of the present invention. As shown in FIG. **5**, the method for acquiring virtual user identification data may include the following steps:

Step **501**: The terminal device sends a virtual user identification data acquiring request to the distribution device based on a near field communication protocol, where the virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired.

Step **502**: Receive subscription relationship data that is of virtual user identification data matching the service selection information and returned by the distribution device based on the near field communication protocol.

Step **503**: The terminal device receives, based on the near field communication protocol, a management program and a driver that are sent by the distribution device, where the management program and the driver match software and hardware systems supported by the feature information of the terminal device; and the virtual user identification data acquiring request further includes feature information of the terminal device. The distribution device may determine, according to received feature information, the management program and the driver matching the software and hardware systems supported by the terminal device.

Step **504**: Execute the management program and the driver, and import the subscription relationship data of the virtual user identification data into a secure storage area configured with access rights in the terminal device.

Step **502** may also be performed after step **503** or step **504**, or step **502** and step **504** are performed simultaneously.

Specifically, after the terminal device acquires the matched virtual user identification data from the distribution device by using the near field communication protocol, if a user needs to use the subscription relationship data of the virtual user identification data, the user may execute a management program and a driver of the matched virtual user identification data, where the management program and the driver match a software feature and a hardware feature that are supported by the terminal device, for example, whether there is a secure storage area, a CPU model or a unique hardware identifier, and a software operating system version, and may be installed in the terminal device in advance. If the management program and the driver of the matched virtual user identification data are not installed in advance, the terminal device needs to perform step **503**, that is, the terminal device first informs, by using the virtual user identification data acquiring request, the distribution device of the feature information of the terminal device, where the feature information includes a software feature and a hardware feature, so as to acquire, from the distribution device, a management program and a driver matching the software feature and the hardware feature that are supported by the terminal device. The distribution device may search the foregoing Table 2 according to the feature information and a classification identifier, and return the management program and the driver of the matched virtual user identification data to the terminal device; and after receiving the management program and the driver, the terminal device performs step **504**.

When the subscription relationship data of the virtual user identification data needs to be used, a specific method for using the management program and the driver is as follows: the management program is executed to select subscription relationship data of virtual user identification data that needs to be used; a secure storage area configured with access rights in the terminal device is accessed by using the driver, so as to operate subscription relationship data of matched virtual user identification data stored in the terminal device. In this case, the terminal device may be connected to an operator network by using the subscription relationship data of the virtual user identification data.

In the method for acquiring virtual user identification data provided by this embodiment, a distribution device can distribute virtual user identification data to a target terminal device based on a near field communication protocol, so that the terminal device can also acquire subscription relationship data of required virtual user identification data without support of a communications network, and then the terminal device activates the subscription relationship data of the virtual user identification data, so as to achieve a purpose of accessing an operator network.

Embodiment 6

FIG. **6** is a schematic diagram of an application scenario of a method for acquiring virtual user identification data according to Embodiment 6 of the present invention. As shown in FIG. **6**, the method for acquiring virtual user identification data specifically includes the following steps:

Step **600**: A terminal device detects feature information of the terminal device, where the feature information includes a hardware feature and a software feature, for example, the hardware feature includes whether there is a secure storage

area, a CPU model or a unique hardware identifier, and the software feature includes an operating system version, or the like.

Step **601**: The terminal device sends a virtual user identification data acquiring request to a distribution device, to request downloading of virtual user identification data. The virtual user identification data acquiring request may carry service selection information, where the service selection information is a filtering condition and refers to an expectation on a service corresponding to the virtual user identification data, for example, a high-rate, a low-tariff, and a type of a management program of the virtual user identification data. The conditions may be determined on a human computer interaction interface according to a user selection. The virtual user identification data acquiring request may also carry feature information such as the hardware feature and the software feature that are of the terminal device and detected in step **600**.

Step **602**: After receiving the virtual user identification data acquiring request, the distribution device determines, according to the service selection information and/or the feature information in the virtual user identification data acquiring request and content of Table 1, Table 2, and Table 3 in the foregoing embodiments, whether the distribution device can provide corresponding virtual user identification data. If the distribution device can provide the corresponding virtual user identification data, the distribution device selects one piece of available virtual user identification data from Table 2, and constructs content of a message to be returned, where the content includes: subscription relationship data, a management program, and a driver of the virtual user identification data, and the management program and the driver are optional. In step **601**, the terminal device may also inform, by using the service selection information, the distribution device whether the management program and the driver of the virtual user identification data are installed in the terminal device in advance.

Step **603**: The distribution device returns the requested content to the terminal device.

Step **604**: The terminal device invokes a capability of an operating system of the terminal device to install the management program and the driver, and executes the management program to import the subscription relationship data of the virtual user identification data. If the management program is installed in advance in the terminal device and the driver is imported into the terminal device in advance, the terminal device needs only to import the subscription relationship data of the virtual user identification data in this step.

Step **605**: The terminal device reports a processing result to the distribution device.

Step **606**: The distribution device updates virtual user identification data stored in the distribution device according to the received report. The distribution device may modify a state of virtual user identification data in a state table of virtual user identification data, for example, Table 4; the distribution device may modify information of an available number segment in a correspondence table between a classification identifier and the available distributed number, for example, Table 2; and the distribution device may delete, from a state table of virtual user identification data, for example, Table 5, subscription relationship data of virtual user identification data that has already been distributed successfully.

Step **607**: The distribution device reports a distribution result to a virtual user identification data server. The virtual user identification data server modifies a state of virtual user identification data that has already been distributed, so as to prepare for provision of an operation service.

In the method for acquiring virtual user identification data provided by this embodiment, a distribution device can distribute virtual user identification data to a target terminal device based on a near field communication protocol, so that the terminal device can also acquire subscription relationship data of required virtual user identification data without support of a communications network, and then the terminal device activates the subscription relationship data of the virtual user identification data, so as to achieve a purpose of accessing an operator network.

Embodiment 7

FIG. **7** is a structural block diagram of a distribution device according to Embodiment 7 of the present invention. The distribution device is connected to a terminal device by using a near field communication protocol. As shown in FIG. **7**, the distribution device may include a number of units.

A storing unit **71** is configured to store virtual user identification data. A receiving unit **72** is configured to receive, based on the near field communication protocol, a virtual user identification data acquiring request sent by the terminal device. Virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired. A processing unit **73** is configured to determine, according to the service selection information, subscription relationship data of virtual user identification data matching the service selection information. A sending unit **74** is configured to send the subscription relationship data to the terminal device based on the near field communication protocol.

In this embodiment, as shown in FIG. **1***b*, the virtual user identification data may include a management program **11**, a driver **13**, and subscription relationship data **15**. The distribution device may access the subscription relationship data **15** by using the management program **11** and the driver **13**, and may implement a function of a physical user identity module. The distribution device in this embodiment may be, for example, a mobile phone or a personal computer; the storing unit **71** of the distribution device may store a large quantity of virtual user identification data in advance. If a user needs to download virtual user identification data, the user may send a virtual user identification data acquiring request to the distribution device after the user establishes a near field communication with the distribution device by using a terminal device, for example, a mobile phone, and by using a near field communication protocol, such as Bluetooth, WiFi, wireless fidelity direct WiFi-Direct, or NFC.

After the receiving unit **72** of the distribution device receives the virtual user identification data acquiring request sent by the terminal device, the processing unit **73** may determine, according to the service selection information carried in the virtual user identification data acquiring request, subscription relationship data of virtual user identification data matching the service selection information, and the sending unit **74** may send data determined by the processing unit to the terminal device. The service selection information is equivalent to a filtering condition, and may indicate a type of a service that can be provided by the virtual user identification data that expects to be acquired by the user by using the terminal device, such as a communications network rate, an operator, a tariff, or a service area.

The expectations may be selected on a human computer interaction interface by the user by using the terminal device.

In the distribution device provided by this embodiment, a sending unit can send subscription relationship data that is of virtual user identification data and determined by a processing unit to a target terminal device based on a near field communication protocol, so that the terminal device can also acquire subscription relationship data of required virtual user identification data without support of a communications network, and then the terminal device activates the subscription relationship data of the virtual user identification data, so as to achieve a purpose of accessing an operator network.

Embodiment 8

FIG. **8** is a structural block diagram of a distribution device according to Embodiment 8 of the present invention. The distribution device is connected to a terminal device by using a near field communication protocol. As shown in FIG. **8**, the distribution device may include a number of units.

A storing unit **81** is configured to store virtual user identification data. A receiving unit **82** is configured receive, based on the near field communication protocol, a virtual user identification data acquiring request sent by the terminal device. The virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired. A processing unit **83** is configured to determine, according to the service selection information, subscription relationship data of virtual user identification data matching the service selection information. A sending unit **84** is configured to send the subscription relationship data to the terminal device based on the near field communication protocol.

Further, in a possible implementation manner, the virtual user identification data stored in the storing unit **81** specifically includes: a correspondence between a classification identifier and the service selection information; and the processing unit **83** is further configured to search, according to the correspondence between the classification identifier and the service selection information, for a classification identifier corresponding to the service selection information.

Specifically, referring to Table 1, after the receiving unit **82** receives virtual user identification data request data sent by the terminal device, the processing unit **83** may search, according to an operator, a tariff, a service area, or the like included in the received service selection information, for a classification identifier of the matched virtual user identification data in the virtual user identification data product table shown in Table 1, where the classification identifier may be classified according to the operator, the tariff, and a communications network rate, and may also be classified in another manner.

Further, in a possible implementation manner, the virtual user identification data stored by the storing unit **81** may specifically further include: a correspondence between the classification identifier and an available number segment; and the processing unit **83** is further configured to search, according to the correspondence between the classification identifier and the available number segment, for an available number segment corresponding to the classification identifier, and acquire, according to the available number segment, subscription relationship data of virtual user identification data matching a distributed number.

Specifically, after finding a matched classification identifier, the processing unit **83** searches, according to the acquired classification identifier, a correspondence table between the classification identifier and the available distributed number shown in Table 2, for matching information, for example, an available number segment, then selects matched available information, for example, an available virtual user identification data number, and acquires subscription relationship data corresponding to the available number. The subscription relationship data of the virtual user identification data may be data encrypted by using a digital certificate, or the like, and may uniquely represent a subscription relationship between a user and a service provider. The virtual user identification data number may be similar to a phone number in Table 2, and may also be in another representation form. Finally, the processing unit **83** submits the subscription relationship data to the sending unit **84**, and the sending unit **84** sends the subscription relationship data to the terminal device by using the near field communication protocol.

Further, in a possible implementation manner, the virtual user identification data stored by the storing unit **81** specifically further includes: a correspondence among the classification identifier, feature information, a management program, and a driver, referring to Table 3; the virtual user identification data acquiring request further includes feature information of the terminal device; the processing unit **83** is further configured to determine, according to the classification identifier and the feature information of the terminal device, a management program and a driver of virtual user identification data that match software and hardware systems supported by the terminal device; and the sending unit **84** is further configured to send, based on the near field communication protocol, the management program and the driver of the virtual user identification data to the terminal device.

Further, in a possible implementation manner, the processing unit **83** is further configured to update locally stored virtual user identification data according to a distribution result, that is, delete subscription relationship data of virtual user identification data that has already been distributed, from the locally stored virtual user identification data, or update a state of subscription relationship data of virtual user identification data that has already been distributed, referring to Table 4 and Table 5.

Further, in a possible implementation manner, the processing unit is further configured to report a distribution result to a virtual user identification data server, so that the virtual user identification data server modifies a state of virtual user identification data that has already been distributed, so as to prepare for provision of an operation service.

Still further, in a possible implementation manner, the storing unit **81** includes: a secure storage area configured with access rights, used to store subscription relationship data of the virtual user identification data.

In the distribution device provided by this embodiment, a sending unit can send subscription relationship data that is of virtual user identification data and determined by a processing unit to a target terminal device based on a near field communication protocol, so that the terminal device can also acquire subscription relationship data of required virtual user identification data without support of a communications network, and then the terminal device activates the subscription relationship data of the virtual user identification data, so as to achieve a purpose of accessing an operator network.

Embodiment 9

FIG. **9** is a structural block diagram of a terminal device according to Embodiment 9 of the present invention. As

shown in FIG. **9**, the terminal device may include a number of units. A sending unit **91** is configured to send a virtual user identification data acquiring request to the distribution device based on a near field communication protocol. The virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired. A receiving unit **92** is configured to receive subscription relationship data that is of virtual user identification data matching the service selection information and returned by the distribution device based on the near field communication protocol.

Specifically, a distribution device stores virtual user identification data, and the distribution device is connected to a terminal device by using a near field communication protocol; when the terminal device needs to download the subscription relationship data of the virtual user identification data, the terminal device first establishes a near field communication with the distribution device by using a near field communication protocol, such as Bluetooth, WiFi, WiFi-Direct, or NFC; then, the sending unit **91** sends a required virtual user identification data acquiring request of the terminal device, where the virtual user identification data acquiring request carries service selection information of virtual user identification data that the terminal device expects to acquire; and after the distribution device determines subscription relationship data of virtual user identification data matching the service selection information, the receiving unit **92** receives the subscription relationship data of the matched virtual user identification data. For a specific method for determining the service selection information and the subscription relationship data of the virtual user identification data, reference may be made to the related descriptions in the foregoing embodiment of the method for distributing virtual user identification data.

In the terminal device for acquiring virtual user identification data provided by the embodiment of the present invention, a receiving unit can acquire subscription relationship data of required virtual user identification data from a distribution device based on a near field communication protocol, so that the terminal device can also acquire subscription relationship data of required virtual user identification data without support of a communications network, and then the terminal device activates the subscription relationship data of the virtual user identification data, so as to achieve a purpose of accessing an operator network.

Embodiment 10

FIG. **10** is a structural block diagram of a terminal device according to Embodiment 10 of the present invention. As shown in FIG. **10**, the terminal device may include a number of units. A sending unit **111** is configured to send a virtual user identification data acquiring request to the distribution device based on a near field communication protocol, where the virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired. A receiving unit **112** is configured to receive subscription relationship data that is of virtual user identification data matching the service selection information and returned by the distribution device based on the near field communication protocol.

The virtual user identification data acquiring request sent by the sending unit **111** of the terminal device may further carry feature information of the terminal device; and the receiving unit **112** may be further configured to receive, based on the near field communication protocol, a management program and a driver that are sent by the distribution device, where the management program and the driver match software and hardware systems supported by the feature information of the terminal device.

Specifically, the management program and the driver of virtual user identification data may be installed in advance, so that the virtual user identification data acquiring request may not carry the feature information of the terminal device. If the management program and the driver of virtual user identification data are not installed in advance, the management program and the driver of the virtual user identification data may be acquired from the distribution device.

Further, in a possible implementation manner, the terminal device further includes: a secure storage area **113**, where the secure storage area is configured with access rights and used to store the received subscription relationship data of the virtual user identification data; and a processing unit **114**, configured to execute the management program and the driver, and import the subscription relationship data of the virtual user identification data into the secure storage area in the terminal device.

In the terminal device provided by this embodiment, a receiving unit may acquire subscription relationship data of required virtual user identification data from a distribution device based on a near field communication protocol, so that the terminal device can also acquire subscription relationship data of required virtual user identification data without support of a communications network, and then the terminal device activates the subscription relationship data of the virtual user identification data, so as to achieve a purpose of accessing an operator network.

Embodiment 11

FIG. **11** is a schematic diagram of an application scenario of a distribution device and a terminal device according to Embodiment 11 of the present invention. As shown in FIG. **11**, a processing unit of a distribution device may be implemented by using a processor and a file transmitting module; a sending unit and a receiving unit may be set in a near field communication module, and a secure storage area may be set in a storing module. A processing unit of a terminal device may be implemented by using a processor and a file transmitting module; a sending unit and a receiving unit may be set in a near field communication module, and a secure storage area may be set in a storing module.

The terminal device may include the following modules: a first processor **1001**, configured to control running of a first memory **1002**, a first file transmitting module **1003**, a first receiver **1004**, a first transmitter **1005**, and a management program and a driver of virtual user identification data in the terminal device. The function of the processing unit **114** in the foregoing terminal device embodiment may be implemented by using the first processor **1001**.

The first memory **1002** is configured to store a management program and a driver of received virtual user identification data, where a secure storage area **113** is set and may store subscription relationship data of virtual user identification data.

The first file transmitting module **1003** receives subscription relationship data from the distribution device by using the first receiver **1004**, or receives a management program and a driver of virtual user identification data, so as to implement file transmission with the distribution device.

The first receiver **1004** can support one or more protocols of Bluetooth, WiFi, WiFi-Direct, and NFC. The function of

the receiving unit **112** in the foregoing terminal device embodiment may be implemented by using the first receiver **1004**.

The first transmitter **1005** can support one or more protocols of Bluetooth, WiFi, WiFi-Direct, and NFC. The function of the sending unit **111** in the foregoing terminal device embodiment may be implemented by using the first transmitter **1005**.

The distribution device may include the following modules: a second processor **2001**, configured to control running of a second memory **2002**, a second file transmitting module **2003**, a second receiver **2004**, delivered subscription relationship data of virtual user identification data, and a management program and a driver in the distribution device; and the function of the processing unit **73** of the distribution device may be implemented by using the second processor **2001**.

The second memory **2002** is configured to store a management program, a driver, and subscription relationship data of virtual user identification data to be sent. The storing unit **71** of the distribution device may be set in the storing module **2002**, and that whether a secure storage area in the second module **2002** is used to store the subscription relationship data of the virtual user identification data is optional.

The second file transmitting module **2003** is configured to acquire, from the second memory **2002**, subscription relationship data that needs to be sent, or acquire a management program and a driver of the virtual user identification data simultaneously, and send, through a second transmitter **2005**, the acquired subscription relationship data or acquired management program and driver of the virtual user identification data to the terminal device, so as to implement file transmission with the terminal device.

The second receiver **2004** can support one or more protocols of Bluetooth, WiFi, WiFi-Direct, and NFC. The function of the receiving unit **72** in the foregoing distribution device embodiment may be implemented by using the second receiver **2004**.

The second transmitter **2005** can support one or more protocols of Bluetooth, WiFi, WiFi-Direct, and NFC. The function of the sending unit **74** in the foregoing terminal device embodiment may be implemented by using the second transmitter **2005**.

In the distribution device provided by this embodiment, subscription relationship data of virtual user identification data can be distributed to a target terminal device based on a near field communication protocol, so that the terminal device can also acquire subscription relationship data of required virtual user identification data without support of a communications network, and then the terminal device activates the subscription relationship data of the virtual user identification data, so as to achieve a purpose of accessing an operator network.

A person of ordinary skill in the art may be aware that, exemplary units and algorithm steps in the embodiments described in this specification can be implemented by electronic hardware or a combination of computer software and electronic hardware. Whether the functions are implemented by hardware or software depends on particular applications and design constraint conditions of the technical solutions. A person skilled in the art may select different methods to implement the described functions for a particular application, but it should not be considered that the implementation goes beyond the scope of the present invention.

If the functions are implemented in the form of computer software and are sold or used as an independent product, it may be considered, to a certain degree, that all or a part (for example, parts contributing to the prior art) of the technical solutions of the present invention are embodied in the form of a computer software product. The computer software product is generally stored in a computer readable storage medium and includes several instructions for instructing a computer device (which may be a personal computer, a server, a network device, or the like) to perform all or a part of the steps of the methods described in the embodiments of the present invention. The foregoing storage medium includes any medium that can store program code, such as a USB flash drive, a removable hard disk, a read-only memory (ROM, Read-Only Memory), a random access memory (RAM, Random Access Memory), a magnetic disk, or an optical disc.

The foregoing descriptions are merely specific implementation manners of the present invention, but are not intended to limit the protection scope of the present invention. Any variation or replacement readily figured out by a person skilled in the art within the technical scope disclosed in the present invention shall fall within the protection scope of the present invention. Therefore, the protection scope of the present invention shall be subject to the protection scope of the claims.

What is claimed is:

1. A method for distributing virtual user identification data, wherein a distribution device stores virtual user identification data and the distribution device is connected to a terminal device by using a near field communication protocol, the method comprising:

receiving a virtual user identification data acquiring request sent by the terminal device, wherein the virtual user identification data acquiring request is received based on the near field communication protocol and carries service selection information of virtual user identification data that needs to be acquired;

determining, according to the service selection information, subscription relationship data of virtual user identification data matching the service selection information; and

sending, by the distribution device, the subscription relationship data to the terminal device based on the near field communication protocol.

2. The method for distributing virtual user identification data according to claim **1**, wherein storing the virtual user identification data specifically comprises storing, by the distribution device, a correspondence between a classification identifier and the service selection information; and

wherein determining the subscription relationship data of virtual user identification data matching the service selection information specifically comprises searching, by the distribution device, according to the correspondence between the classification identifier and the service selection information, for a classification identifier corresponding to the service selection information.

3. The method for distributing virtual user identification data according to claim **2**, wherein storing the virtual user identification data comprises storing, by the distribution device, a correspondence between the classification identifier and an available number segment; and

wherein determining the subscription relationship data of virtual user identification data matching the service selection information specifically further comprises: searching, by the distribution device, according to the correspondence between the classification identifier and the available number segment, for an available number segment corresponding to the classification

identifier, and acquiring, according to the available number segment, subscription relationship data of virtual user identification data matching a distributed number.

4. The method for distributing virtual user identification data according to claim **2**, wherein storing the virtual user identification data specifically further comprises storing, by the distribution device, a correspondence among the classification identifier, feature information, a management program, and a driver;

wherein the virtual user identification data acquiring request further comprises feature information of the terminal device; and

wherein the method further comprises determining, by the distribution device and according to the classification identifier and the feature information of the terminal device, a management program and a driver of the virtual user identification data that match software and hardware systems supported by the terminal device, and sending, by the distribution device, the management program and the driver of the virtual user identification data to the terminal device based on the near field communication protocol.

5. The method for distributing virtual user identification data according to claim **1**, further comprising updating locally stored virtual user identification data according to a distribution result.

6. The method for distributing virtual user identification data according to claim **1**, further comprising storing the subscription relationship data in a secure storage area configured with access rights in the distribution device.

7. A method for acquiring virtual user identification data, wherein a distribution device stores virtual user identification data and the distribution device is connected to a terminal device by using a near field communication protocol, the method comprising:

sending, by the terminal device, a virtual user identification data acquiring request to the distribution device, wherein the virtual user identification data acquiring request is sent based on the near field communication protocol and carries service selection information of virtual user identification data that needs to be acquired; and

receiving subscription relationship data that is of virtual user identification data matching the service selection information and returned by the distribution device based on the near field communication protocol.

8. The method for acquiring virtual user identification data according to claim **7**, wherein the virtual user identification data acquiring request further comprises feature information of the terminal device, and the method further comprising:

receiving, by the terminal device, based on the near field communication protocol, a management program and a driver that are sent by the distribution device, wherein the management program and the driver match software and hardware systems supported by the feature information of the terminal device.

9. The method for acquiring virtual user identification data according to claim **8**, further comprising executing the management program and the driver, and importing the subscription relationship data of the virtual user identification data into a secure storage area configured with access rights in the terminal device.

10. A distribution device, wherein the distribution device is connected to a terminal device by using a near field communication protocol, the distribution device comprising:

a memory, configured to store virtual user identification data;

a receiver, configured to receive, based on the near field communication protocol, a virtual user identification data acquiring request sent by the terminal device, wherein the virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired;

a processor, configured to determine, according to the service selection information, subscription relationship data of virtual user identification data matching the service selection information; and

a transmitter, configured to send the subscription relationship data to the terminal device based on the near field communication protocol.

11. The distribution device according to claim **10**, wherein:

the virtual user identification data stored by the memory comprises a correspondence between a classification identifier and the service selection information; and

the processor is further configured to search, according to the correspondence between the classification identifier and the service selection information, for a classification identifier corresponding to the service selection information.

12. The distribution device according to claim **11**, wherein:

the virtual user identification data stored by the memory further comprises a correspondence between the classification identifier and an available number segment; and

the processor is further configured to search, according to the correspondence between the classification identifier and the available number segment, for an available number segment corresponding to the classification identifier, and to acquire, according to the available number segment, subscription relationship data of virtual user identification data matching a distributed number.

13. The distribution device according to claim **11**, wherein the virtual user identification data stored by the memory further comprises a correspondence among the classification identifier, feature information, a management program, and a driver;

wherein the virtual user identification data acquiring request further comprises feature information of the terminal device;

wherein the processor is further configured to determine, according to the classification identifier and the feature information of the terminal device, a management program and a driver of the virtual user identification data that match software and hardware systems supported by the terminal device; and

wherein the transmitter is further configured to send the management program and the driver of the virtual user identification data to the terminal device based on the near field communication protocol.

14. The distribution device according to claim **10**, wherein the processor is further configured to update locally stored virtual user identification data according to a distribution result.

15. The distribution device according to claim **10**, wherein the memory comprises a secure storage area con-

figured with access rights, used to store the subscription relationship data of the virtual user identification data.

16. A terminal device, wherein a distribution device stores virtual user identification data and the distribution device is connected to a terminal device by using a near field communication protocol, the terminal device comprising:

a transmitter, configured to send, based on the near field communication protocol, a virtual user identification data acquiring request to the distribution device, wherein the virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired; and

a receiver, configured to receive subscription relationship data that is of virtual user identification data matching the service selection information and returned by the distribution device based on the near field communication protocol.

17. The terminal device according to claim **16**, wherein the virtual user identification data acquiring request further comprises feature information of the terminal device; and

wherein the transmitter is further configured to receive, based on the near field communication protocol, a management program and a driver that are sent by the distribution device, wherein the management program and the driver match software and hardware systems supported by the feature information of the terminal device.

18. The terminal device according to claim **17**, wherein the terminal device further comprises a processor, configured to execute the management program and the driver and to import the subscription relationship data of the virtual user identification data into a secure storage area configured with access rights in the terminal device.

19. A terminal, wherein the terminal is connected to a distribution device by using a near field communication protocol, the distribution device storing virtual user identification data, the terminal comprising:

a transmitter, configured to send, based on the near field communication protocol, a virtual user identification data acquiring request to the distribution device, wherein the virtual user identification data acquiring request carries service selection information of virtual user identification data that needs to be acquired;

a receiver, configured to receive subscription relationship data that is of virtual user identification data matching the service selection information and returned by the distribution device based on the near field communication protocol; and

a processor, configured to control the receiver, the transmitter, and running of a management program and a driver of the virtual user identification data.

20. The terminal according to claim **19**, wherein the terminal further comprises a memory that stores a management program and a driver of the received virtual user identification data and the subscription relationship data of the virtual user identification data.

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